

CLAIMS

1. A photovoltaic element having at least a photovoltaic layer and a transparent electrode layer deposited on a metal substrate, a portion of the transparent electrode layer being continuously removed at a peripheral part of the metal substrate, wherein an island-shaped transparent-electrode-layer-removed-portion is provided in the transparent electrode layer in a power-generating region surrounded by the removed portion of the transparent electrode layer, a rear surface side bus-bar electrode electrically connected to the metal substrate is disposed on the rear surface side of the metal substrate at the rear of the island-shaped transparent-electrode-layer-removed-portion, and the rear surface side bus-bar electrode is connected to the metal substrate at a portion corresponding to the island-shaped transparent-electrode-layer-removed-portion.

2. The photovoltaic element according to claim 1, wherein the island-shaped transparent-electrode-layer-removed-portion is separate from the removed portion of the transparent electrode layer that surrounds the power-generating region.

3. The photovoltaic element according to claim 1, wherein the island-shaped transparent-electrode-layer-removed-portion is integrated with the removed

portion of the transparent electrode layer that surrounds the power-generating region.

4. The photovoltaic element according to claim 1, wherein a current-collecting electrode is disposed through an insulating member on the island-shaped transparent-electrode-layer-removed-portion just over the portion where the rear surface side bus-bar electrode and the metal substrate are connected to each other.

10 5. The photovoltaic element according to claim 1, wherein a plurality of current-collecting electrodes are provided on the transparent electrode layer, and the island-shaped transparent-electrode-layer-removed-portion just over the portion where the rear surface side bus-bar electrode and the metal substrate are connected to each other is arranged between the current-collecting electrodes.

6. A method of producing a photovoltaic element having at least a photovoltaic layer and a transparent electrode layer deposited on a metal substrate, a portion of the transparent electrode layer being continuously removed at a peripheral part of the metal substrate, the method comprising the steps of:

25 providing an etching line in the photovoltaic element;

providing an island-shaped transparent-

electrode-layer-removed-portion in the transparent electrode layer in a region surrounded by the etching line in the photovoltaic element; and

disposing a rear surface side bus-bar electrode
5 on the rear surface side of the metal substrate at the rear of the island-shaped transparent-electrode-layer-removed-portion and connecting the rear surface side bus-bar electrode to the metal substrate at a portion corresponding to the island-shaped
10 transparent-electrode-layer-removed-portion.

7. The method of producing the photovoltaic element according to claim 6, wherein the step of providing the etching line in the photovoltaic element and the step of providing the island-shaped
15 transparent-electrode-layer-removed-portion are carried out in the same step.

8. The method of producing the photovoltaic element according to claim 6, wherein the step of providing the etching line in the photovoltaic
20 element and the step of providing the island-shaped transparent-electrode-layer-removed-portion are carried out separately from each other.

9. The method of producing the photovoltaic element according to claim 6, wherein at least the
25 step of providing the island-shaped transparent-electrode-layer-removed-portion is carried out prior to the step of connecting the rear surface side bus-

bar electrode to the metal substrate.

10. The method of producing the photovoltaic element according to claim 6, wherein at least the step of connecting the rear surface side bus-bar electrode to the metal substrate is carried out prior to the step of providing the island-shaped transparent-electrode-layer-removed-portion.